CLAIMS

1. An apparatus for manufacturing a semiconductor device, comprising:

a first chamber having a first substrate holder provided in the lower portion of the first chamber for mounting a sample thereon, a halogen lamp provided in the upper portion of the first chamber for irradiating lamp light to the sample, and a substrate door through which the sample passes;

a second chamber having a temperature-adjustable second substrate holder provided in the lower portion of the second chamber for mounting the sample thereon, a middle film provided in the middle portion of the second chamber for dividing the chamber into an upper portion and a lower portion, an elevating portion attached to said second substrate holder for moving said second substrate holder into the upper portion or the lower portion on the basis of the middle film, and a metal depositing portion provided in the upper portion of the second chamber;

pumping portions connected to said first chamber and said second chamber, for adjusting the pressures thereof, respectively;

gas injecting portions connected to said first chamber and said second chamber, for injecting a gas by a certain amount, respectively; and

a connecting portion for allowing the sample to reciprocally moving between said first chamber and said second chamber, without injecting outside air, the connecting portion including a gate valve.

2. The apparatus for manufacturing the semiconductor device according to claim 1, wherein said metal depositing portion includes a sputtering gun, a sputter shutter for preventing the metal to be deposited from being spread into the

both side thereof during the sputtering process, and a shutter stop for adjusting the aperture of the sputter shutter.

3. The apparatus for manufacturing the semiconductor device according to claim 1, wherein said pumping portion uses a rotary pump and a turbo molecular pump.

4. The apparatus for manufacturing the semiconductor device according to claim 1, further comprising thermocouples attached to said first substrate holder and said second substrate holder for measuring the temperatures of said first chamber and said second chamber, respectively.

5. The apparatus for manufacturing the semiconductor device according to claim 1, further comprising a port provided on the side surface of said first chamber for providing an UV lamp or an electronic source.

6. A method for manufacturing a semiconductor device using the apparatus for manufacturing the semiconductor device according to claim 1, comprising the steps of:

cleaning a substrate on which a semiconductor structure is formed, by using said first chamber;

moving said substrate into said second chamber after cleaning the substrate; and

depositing a metal film,

wherein the steps are performed in batch process, without being exposed to outside air.

7. The method for manufacturing the semiconductor device according to claim 6, further comprising heating the substrate after depositing the metal film.

8. The method for manufacturing the semiconductor device according to claim 6, further comprising growing a sacrificial oxide film in said second chamber, before depositing the metal film.

9. A method for manufacturing a schottky barrier MOSFET using the apparatus for manufacturing the semiconductor device according to claim 1, comprising the steps of:

positioning a substrate on which a silicon layer, a gate oxide layer, a gate electrode, a spacer is formed in sequence, in said first chamber;

cleaning the substrate by using said first chamber, before depositing a metal film for forming a source/drain electrode;

moving said substrate into said second chamber through said connecting portion, after cleaning the substrate; and

pulling up the substrate to the upper portion of the second chamber;

depositing a metal film by using said metal depositing portion; and

pulling down and heating the substrate to form a silicide, after depositing the metal film.

10. The method for manufacturing the schottky barrier MOSFET

according to claim 9, further comprising growing a sacrificial oxide film in said second chamber, before depositing said metal film.

11. The method for manufacturing the schottky barrier MOSFET according to claim 9, wherein said the step of cleaning is performed by a vacuum cleaning process or a H_2 baking process, said vacuum cleaning process is performed by heating the substrate to the temperature of 650-750 °C during 60-300 seconds, under the ultra high vacuum state which the pressure is equal to and less than 10^{-8} Torr, and said H_2 baking process is performed by heating the substrate to the temperature of 700-900°C during 60-300 seconds under the condition that H_2 gas flows in the extent of 0.5-50 slm and pressure is maintained at 0.1-10 Torr.

12. The method for manufacturing the schottky barrier MOSFET according to claim 10, wherein the step of growing the sacrificial oxide film is performed in the lower portion of said second chamber, and includes the step of maintaining the substrate at the pressure equal to and less than 10^{-8} Torr and the temperature of 550-750°C during 100-500 seconds and injecting Si_2H_6 or SiH_4 gas into the chamber by 1-50 sccm to form a selective silicon layer.

13. The method for manufacturing the schottky barrier MOSFET according to claim 9, wherein the step of depositing the metal film is performed by using a sputtering method under the state of the pressure of 0.005-50 Torr and the atmosphere of Ar or N_2 gas, and the thickness of the deposited metal film is in the range of 50-500Å.

14. The method for manufacturing the schottky barrier MOSFET according to claim 9, wherein the step of heating the substrate for forming the silicide is performed in said first chamber at the pressure equal to and less than 10^{-8} Torr.